FILE 'DGENE' ENTERED AT 13:04:20 ON 13 OCT 2000
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=> s L1 and fung?

L2 3537 L1 AND FUNG?

=> s L1 and (pH 4.5-7.5)

L3 0 L1 AND (PH 4.5-7.5)

=> s L1 and (residual(w)activity)

L4 12 L1 AND (RESIDUAL(W) ACTIVITY)

=> dup rem l4

DUPLICATE IS NOT AVAILABLE IN 'DGENE'.
ANSWERS FROM THESE FILES WILL BE CONSIDERED UNIQUE
PROCESSING COMPLETED FOR L4
L5 8 DUP REM L4 (4 DUPLICATES REMOVED)

=> d l5 ibib ab 1-8

L5 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 1
ACCESSION NUMBER: 2000:717708 CAPLUS
TITLE: Production of a thermostable alkali-tolerant **xylanase** from Bacillus circulans AB 16 grown on wheat straw
AUTHOR(S): Dhillon, Ashita; Khanna, Sunil
CORPORATE SOURCE: Microbial Biotechnology, Tata Energy Research Institute, India Habitat Center, New Delhi, 110003, India
SOURCE: World J. Microbiol. Biotechnol. (2000), 16(4), 325-327
CODEN: WJMBEY; ISSN: 0959-3993
PUBLISHER: Kluwer Academic Publishers
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Bacillus circulans AB 16 was able to produce 50 IU/mL of **xylanase**, with negligible cellulase activity when grown on untreated wheat straw. The pH optimum of the crude enzyme was 6-7 with a temp. optimum of 80.degree.C. The enzyme showed high pH and thermal stability retaining 100% activity at 60.degree.C, pH 8 and 9 after 2.5 h of incubation. The **residual activity** at 70.degree.C after 2.5 h was 62% and 45% at pH 8 and 9, resp. At 75.degree.C only 22.2% activity remained at pH 8 after 1 h incubation. Since Kraft pulp is alk. this enzyme could be used for prebleaching of pulp at temps. up to 70.degree.C without pH adjustment.

L5 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 2
ACCESSION NUMBER: 2000:539732 CAPLUS
TITLE: **Xylanase** from the psychrophilic yeast Cryptococcus adeliae
AUTHOR(S): Petrescu, Ioan; Lamotte-Brasseur, Josette; Chessa, Jean-Pierre; Ntarima, Patricia; Claeyssens, Marc; Devreese, Bart; Marino, Gennaro; Gerday, Charles
CORPORATE SOURCE: Eurogentec SA, Seraing, Belg.

SOURCE: Extremophiles (2000), 4(3), 137-144
CODEN: EXTRFI; ISSN: 1431-0651
PUBLISHER: Springer-Verlag Tokyo
DOCUMENT TYPE: Journal
LANGUAGE: English

AB A **xylanase** belonging to family 10 is produced by Cryptococcus adeliae, an Antarctic yeast that exhibits optimal growth at low temp. The mature glycosylated **xylanase** secreted by C. adeliae is composed of 338 amino acid residues and 26 .+-. 3 osidic residues, and shares 84% identity with its mesophilic counterpart from C. albidus. The **xylanase** from C. adeliae is less thermostable than its mesophilic homolog when the **residual activities** are compared, and this difference was confirmed by differential scanning calorimetry expts. In the range 0.degree.-20.degree.C, the cold-adapted **xylanase** displays a lower activation energy and a higher catalytic efficiency. All these observations suggest a less compact, more flexible mol. structure. Anal. of computerized mol. models built up for both psychrophilic and mesophilic **xylanases** indicates that the adaptation to cold consists of discrete changes in the tridimensional structure: of 53 substitutions, 22 are presumably involved in the adaptation process. These changes lead mainly to a less compact hydrophobic packing, to the loss of one salt bridge, and to a destabilization of the macrodipoles of the helixes.

REFERENCE COUNT: 36
REFERENCE(S):
(1) Aghajari, N; Protein Sci 1996, V5, P2128 CAPLUS
(2) Aghajari, N; Protein Sci 1998, V7, P564 CAPLUS
(3) Aghajari, N; Structure 1998, V6, P1503 CAPLUS
(4) Alber, T; Nature 1987, V330, P41 CAPLUS
(5) Alvarez, M; J Biol Chem 1998, V273, P2199 CAPLUS
ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1999:587785 CAPLUS
DOCUMENT NUMBER: 132:89840
TITLE: Regulation, purification and characterisation of thermostable and potentially useful alkaline **xylanases** of a thermophilic Bacillus sp. strain XT2
AUTHOR(S): Rizvi, Syed Muhammad Aslam; Akhtar, M. Saleem; Saleem, Mahjabeen; Akhtar, M. Waheed
CORPORATE SOURCE: Institute of Biochemistry and Biotechnology, University of the Punjab, Lahore, 54590, Pak.
SOURCE: Pak. J. Biochem. Mol. Biol. (1997), 30(1-2), 1-21
CODEN: PJBBF5
PUBLISHER: Pakistan Society of Biochemistry and Molecular Biology
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Shake flask cultivation and an agar plate clearing assays as an anal. and exptl. framework is presented and were used to screen a no. of species from soil samples, specific for **xylanase** activity at 70.degree.. Out of the four active organisms isolated, one of them producing highest activity was subjected for detailed investigations. When grown at 65-70.degree. with an initial pH of 6.5-9.0, the activity obtained was 4.20 U/mL of the culture supernatant. Strain showed optimal activity during 10th hours of fermn. Xylose and inorg. nitrogen, particularly, NaNO3 were the best as carbon and nitrogen sources, resp. Enzyme synthesis was repressed when cultivated in the presence of glucose and other hexoses. Enzyme activity was enhanced almost twice when medium was supplemented with the combination of 0.3% xylan, in addn. to 0.4% xylose, and surface active agent. The activity were detected by native-PAGE and were purified after concn. through ultrafiltration membrane, by DEAE-Sepharose chromatog. followed by hydroxylapatite chromatog. Two of

the active fractions when analyzed by SDS-PAGE were found to be homogeneous and their sizes were found to be approx. 43 and 46 kDa. Both enzymes were found to have similar pH and temp. optima (8.0 and 65.degree. resp.). Most of the properties of **xylanases** were similar. When thermostability characteristics were studied, enzymes found to be highly thermostable. The pH stability exhibited by the enzymes were 6.0-9.0 with 80% **residual activity** at pH 9.0, possessing almost full activities, when preincubated in the same pH range for 12 h at 65-70.degree.. The stability of the enzymes declined at temps. higher than 80.degree.. Both enzymes have excellent stability at ambient temp., no significant loss of activity being detected after 72 h. The **xylanases** displayed remarkable pH and thermal stability. Furthermore, they remained active under prolonged storage, having no significant loss of activity for more than three month at 4.degree.. Fe++, Mn++ at 2.0 mM concn. activated **xylanase** activities significantly by 120 and 90% resp. Other activators were Mg++ and Ca++. Hg++, Ni++, Cd++ and Zn++ strongly inhibited the enzymes. The enzymes exhibited high specificity for xylan, suggesting that these are true endoxylanases and possessed high specific activities. The strain is attractive for agrofiber, pulp-based processes and for the saccharification of lignocellulosic materials. The specific properties of the **xylanases** are favorable in the application of enzymes from industrial point of view.

REFERENCE COUNT: 58

REFERENCE(S):
(1) Akiba, T; Methods Enzymol 1988, V160, P655 CAPLUS
(4) Bailey, M; Appl Micobiol Biotechnol 1989, V30, P5 CAPLUS
(6) Balakrishnan, H; World J Microbiol Biotechno 1992, V8, P627 CAPLUS
(7) Beguin; Anal Biochem 1983, V131, P333 CAPLUS
(9) Bertrand, J; Biotechnol and Bioeng 1989, V33, P791 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2000 ACS

ACCESSION NUMBER: 1997:498276 CAPLUS
DOCUMENT NUMBER: 127:187969
TITLE: Endoglucanase, .beta.-D-glucosidase and **xylanase** induction in Dichomitus squalens (Karst) reid
AUTHOR(S): Resende, E.; Carolino, M.; Rodeia, N. Teixeira
CORPORATE SOURCE: Departamento de Biologia Vegetal, Faculdade de Ciencias da Universidade de Lisboa, Lisbon, 1700, Port.
SOURCE: Chem. Process. Wood Plant Fibrous Mater., [Cellucon '94] (1996), Meeting Date 1994, 413-417. Editor(s): Kennedy, John Frederick; Phillips, Glyn Owain; Williams, Peter Anthony. Woodhead: Cambridge, UK. CODEN: 64TXAU
DOCUMENT TYPE: Conference
LANGUAGE: English

AB The amt. of endoglucanase, .beta.-D-glucosidase and **xylanase** produced by the fungus D. squalens were dependent on the source of carbon and on the presence of the Tween 80 in the growth medium. Growth on cotton cellulose enhanced the prodn. of endoglucanase, .beta.-D-glucosidase and **xylanase** in the culture filtrates relative to the other sources of carbon (Avicel cellulose, CM-cellulose = CMC, paper mill sludge, sawdust of Pinus sp.). The endoglucanase induced by CMC exhibits 76% of **residual activity** after 2 h at 80.degree.C, maintaining about 100% activity after 1 h at 50.degree.C, pH 5.0; it has a half-life of 17 min at 70.degree.C, pH 5.0. This enzyme

shows optimal pH activity at pH 5.0 and pH stability between 4.0 and 6.36 where it exhibits **residual activity** of more than 76%. The .beta.-D-glucosidase component was isolated by chromatog. on DEAE - Sephadex A-50.

L5 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1996:483146 CAPLUS
DOCUMENT NUMBER: 125:166554
TITLE: Activity of added enzymes in the stomach and ileum of growing pigs
AUTHOR(S): van der Meulen, J.; Inborr, J.; Puhakka, J.; Bakker, J. G. M.
CORPORATE SOURCE: Institute for Animal Science and Health, DLO, Lelystad, 8200 AD, Neth.
SOURCE: Schriftenr. - Forschungsinst. Biol. Landwirtsch. Nutztiere **(1994)**, 4(VIth International Symposium on Digestive Physiology in Pigs, 1994, Vol. 2), 348-351
CODEN: SFBNFC; ISSN: 0946-1981
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Enzyme activities were measured along the gastrointestinal tract of pigs fed diets with 40% wheat bran, either untreated or treated with a crude enzyme prepn. Five barrows fitted with stomach and ileal cannulas were fed 5 diets for 5 two-week periods in a 5x5 Latin square design. The wheat bran of the control diet (C) was incubated with a mixt. of water and acetic acid at 39.degree.C and **pH** 5.0 for 3.5 h. For treatments Cel-I and Kyl-I wheat bran was incubated in the same conditions with either an added crude cellulase or **xylanase** prepn., resp. Just before feeding, wheat bran treated in the same way as C was supplemented either with the cellulase or **xylanase** prepn. to give treatments Cel-A and Xyl-A, resp. Gastric digesta was collected just after the pigs had finished their meal (0 h) and 2 and 4 h after feeding. Ileal digesta was collected in two-hour intervals for 6 h. Samples were analyzed for **xylanase** and .beta.-glucanase activities. **Xylanase** activity of stomach contents was higher in pigs fed the enzyme-treated diest, but only significant for the cellulase-treated diets just after feeding. **Xylanase** activity in the stomach decreased rapidly and 4 h after feeding **residual activity** was less than 20%. .beta.-Glucanase activity of stomach contents was higher in pigs fed the cellulase-treated diets, but only significant 4 h after feeding for diet Cel-A. In ileal contents of pigs fed diet C, both **xylanase** and .beta.-glucanase activities were relatively high. Between 2 and 6 h after feeding **xylanase** activity in ileal contents of pigs fed the **xylanase**-treated diets was higher than of pigs fed the control diet, whereas b-glucanase in ileal contents of pigs fed the cellulase-treated diets was higher between 4 and 6 h after feeding. Although a large portion of the added enzyme activities were recovered immediately after feeding, it is concluded that the activities of added enzymes decreased with time and were almost nil 12 h after feeding. The results suggest that the microflora in the small intestine may produce considerable amts. of **xylanase**.

L5 ANSWER 6 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1996:59339 BIOSIS
DOCUMENT NUMBER: PREV199698631474
TITLE: Xylanasic activity of Dichomitus squalens (P. Karst.) Reid induced by various substrates.
AUTHOR(S): Dias, A.; Resende, M. E.; Saagua, M. C.; Carolino, M. M.; Rodeia, N.
CORPORATE SOURCE: Dep. Biol. Veg., Fac. Ciencias, Univ. Lisboa, Bloco C2, Campo Grande, 1700 Lisboa Portugal

SOURCE: **Revista** de Biologia (Lisbon), (1994) Vol. 15, No. 1-4, pp. 85-[illegible].
ISSN: 0034-7736.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English; Portuguese
AB Just like the cellulases, the **xylanase** system consists of various enzymes that have been classified as beta-xylosidases, exo-beta-**xylanases** and endo-beta-**xylanases** (CONTACT & BARNOUD, 1976). To study the xylanasic activity of Dichomitus squalens (P. Karst.) Reid we inoculated mycelium in a batch system, unshaken and incubated at a temperature of 28 degree C. The carbon sources tested were pinus wood sawdust, newspaper strips and paper mill sludge (the wood transformed was Eucalyptus). All extracellular extracts were assayed to test endo-**xylanases** at 50 degree C. The presented activity and the highest value obtained, in the assay conditions, was 228 nmol xylose min-1 when the carbon source was strips of newspaper. The 70 degree C temperature was the best for endoxylanase activity whose value reached 314 nmol xylose min-1. For the same extracellular assay and after a 1 hour incubation period at 70 degree C the **residual activity** was about 65%.

L5 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2000 ACS DUPLICATE 3
ACCESSION NUMBER: 1990:18930 CAPLUS
DOCUMENT NUMBER: 112:18930
TITLE: Carbohydrate-degrading enzymes in germinating wheat
AUTHOR(S): Corder, A. M.; Henery, R. J.
CORPORATE SOURCE: Queensland Wheat Res. Inst., Toowoomba, 4350, Australia
SOURCE: Cereal Chem. (1989), 66(5), 435-9
CODEN: CECHAF; ISSN: 0009-0352
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The prodn. of carbohydrate-degrading enzymes was followed during the first 5 days of germination of wheat (cultivar Hartog). .alpha.-Amylase (EC 3.2.1.1) increased from the first day to reach a peak after 4 days. .beta.-(1.fwdarw.3)(1.fwdarw.4)-Glucanase (EC 3.2.1.73) increased from day 1 to day 5. Endo-(1.fwdarw.4)-.beta.-**xylanase** (EC 3.2.1.8) activity increased only slowly until the fifth day when activity increased >3-fold. .beta.-Fructofuranosidase (EC 3.2.1.26) was not detected until the third day. Movement of hydrolytic enzymes into the endosperm and thus milling fractions may be controlled by enzymes degrading the cell walls. Staining with fluorescein dibutyrate indicated that on av. >30% of the endosperm had been penetrated by lipase-esterase activity by the fifth day. All activities declined when the grain was dried at 30.degree., but the effect of drying varied. .alpha.-Amylase activity was reduced by 69%, whereas .beta.-amylase (EC 3.2.1.2) activity declined by only 16%. **Residual activities** of hydrolytic enzymes in sprouted wheat may be detd. by environmental conditions during grain drying.

L5 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1987:574301 CAPLUS
DOCUMENT NUMBER: 107:174301
TITLE: Recovery of enzymes from wort after citric acid fermentation
AUTHOR(S): Galas, Edward; Kubik, Celina; Turkiewicz, Marianna; Zielinska, Maria
CORPORATE SOURCE: Inst. Biochem. Tech., Lodz, Pol.
SOURCE: Przem. Ferment. Owocowo-Warzywny (1986), 30(11-12),

20-3
CODEN: PFOWDZ; ISSN: 0137-2645
DOCUMENT TYPE: Journal
LANGUAGE: Polish
AB Lowering the temp. of citric acid pptn. with Ca(OH)2 from an Aspergillus niger fermn. medium from 80 to 40.degree. did not affect citrate recovery, which was 96-99% from media contg. 13.8-15.3% acid, and partly protected enzyme activity. Pectinolytic and saccharifying activity of the supernatant decreased by 10 and 20-30% , resp. The **residual activity** of the supernatant pectinolytic enzymes and endo-CM-cellulase remained stable for 1 yr at 4.degree.. The enzymes were pptd. with acetone from the supernatant with 100% efficiency. Pptn. of enzymes with EtOH before citrate pptn. decreased the recovery of citrate to 93.3% and yielded protein 12.4%, pectinase 100%, polygalacturonase 34.2%, endo-CM-cellulase 91%, saccharifying cellulase 10.7%, and **xylanase** 42.4%.

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=> s L1 and (animal feed)

L2          251 L1 AND (ANIMAL FEED)

=> s L2 and (pH(w)6.0)

L3            1 L2 AND (PH(W) 6.0)

=> s L2 and (residual(w)activity)

L4            0 L2 AND (RESIDUAL(W) ACTIVITY)

=> d l3 ibib ab


L3   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2000 ACS
ACCESSION NUMBER:         2000:351671  CAPLUS
DOCUMENT NUMBER:          133:14087
TITLE:                    Thermostable xylanase variants for use in
                          animal feeds
INVENTOR(S):              Sung, Wing L.; Tolan, Jeffrey S.
PATENT ASSIGNEE(S):       Iogen Corporation, Can.
SOURCE:                   PCT Int. Appl., 86 pp.
                          CODEN: PIXXD2
DOCUMENT TYPE:            Patent
LANGUAGE:                 English
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ----------------  ----  --------       ---------------  --------
     WO 2000029587      A1   20000525       WO 1999-CA1093   19991116
         W:  AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CU, DE, DK, EE,
             ES, FI, GB, GE, GH, GM, KE, KG, KZ, LK, LR, LS, MX, NO, PL, PT,
             RO, RU, SD, SE, SG, SI, SK, US, VN, YU, ZA
         RW: GH, GM, KE, LS, MW, SD, SL, UG, AT, BE, CH, CY, DE, DK, ES, FI,
             FR, GB, IE, IT, LU, NL, PT, SE, NE, SN, TD, TG
PRIORITY APPLN. INFO.:                          US 1998-108504   19981116
AB   The present invention is directed to thermostable xylanase
     enzymes that are suitable for feed pelleting applications.  The novel
     xylanase enzymes comprise at least 40% of their optimal activity
     from a pH range from about pH 3.5 to about pH 6.
     0, and from about 40 to about 60.degree., and exhibit at least 30%
     of their optimal activity after a pre-incubation step for 30 min at
     70.degree. in the presence of 40% glycerol.  Also disclosed are modified
     xylanase mols. comprising either a basic amino acid at position
     162 (Trichoderma reesei xylanase (TrX) numbering), or its equiv.
     position in other xylanase mols., at least one disulfide bridge,
     or a combination thereof.  The thermostable xylanase mols. of
     the present invention have a physiol. temp. and pH optima and are useful
     as animal feeds additives since they can withstand the
     heat assocd. with feed sterilization and pellet formation, yet they
     exhibit optimal activity within an animal to aid in breakdown of ingested
     feed.
REFERENCE COUNT:          6
REFERENCE(S):             (1) Finnfeeds Int Ltd; WO 9529997 A 1995
                          (2) Gruber, K; BIOCHEMISTRY 1998, V37(29), P13475
                          (3) Moreau, A; ENZYME AND MICROBIAL TECHNOLOGY 1994,
                              V16(5), P420 CAPLUS
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(4) National Research Council Of Canada; WO 9424270 A 1994

(6) Wakarchuk, W; PROTIEN ENGINEERING 1994, V7(11), P1379 CAPLUS

ALL CITATIONS AVAILABLE IN THE RE FORMAT

L5 ANSWER 6 OF 8 BIOSIS COPYRIGHT 2000 BIOSIS
ACCESSION NUMBER: 1996:59339 BIOSIS
DOCUMENT NUMBER: PREV199698631474
TITLE: Xylanasic activity of Dichomitus squalens (P. Karst.) Reid induced by various substrates.
AUTHOR(S): Dias, A.; Resende, M. E.; Saagua, M. C.; Carolino, M. M.; Rodeia, N.
CORPORATE SOURCE: Dep. Biol. Veg., Fac. Ciencias, Univ. Lisboa, Bloco C2, Campo Grande, 1700 Lisboa Portugal
SOURCE: **Revista** de Biologia (Lisbon), (1994) Vol. 15, No. 1-4, pp. 85-89.
ISSN: 0034-7736.
DOCUMENT TYPE: Article
LANGUAGE: English
SUMMARY LANGUAGE: English; Portuguese

AB Just like the cellulases, the **xylanase** system consists of various enzymes that have been classified as beta-xylosidases, exo-beta-**xylanases** and endo-beta-**xylanases** (CONTACT & BARNOUD, 1976). To study the xylanasic activity of Dichomitus squalens (P. Karst.) Reid we inoculated mycelium in a batch system, unshaken and incubated at a temperature of 28 degree C. The carbon sources tested were pinus wood sawdust, newspaper strips and paper mill sludge (the wood transformed was Eucalyptus). All extracellular extracts were assayed to test endo-**xylanases** at 50 degree C. The presented activity and the highest value obtained, in the assay conditions, was 228 nmol xylose min-1 when the carbon source was strips of newspaper. **The** 70 degree C temperature was the best for endoxylanase activity whose value reached 314 nmol xylose min-1. For the same extracellular assay and after a 1 hour incubation period at 70 degree C the **residual activity** was about 65%.

L5 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2000 ACS
ACCESSION NUMBER: 1997:498276 CAPLUS
DOCUMENT NUMBER: 127:187969
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AUTHOR(S): Resende, E.; Carolino, M.; Rodeia, N. Teixeira
CORPORATE SOURCE: Departamento de Biologia Vegetal, Faculdade de Ciencias da Universidade de Lisboa, Lisbon, 1700, Port.
SOURCE: Chem. Process. Wood Plant Fibrous Mater., [Cellucon '94] (1996), **Meeting Date 1994, 413-417.** Editor(s): Kennedy, John Frederick; Phillips, Glyn Owain; Williams, Peter Anthony. Woodhead: Cambridge, UK. CODEN: 64TXAU
DOCUMENT TYPE: Conference
LANGUAGE: English
AB The amt. of endoglucanase, .beta.-D-glucosidase and **xylanase** produced by the fungus D. squalens were dependent on the source of carbon and on the presence of the Tween 80 in the growth medium. Growth on cotton cellulose enhanced the prodn. of endoglucanase, .beta.-D-glucosidase and **xylanase** in the culture filtrates relative to the other sources of carbon (Avicel cellulose, CM-cellulose = CMC, paper mill sludge, sawdust of Pinus sp.). The endoglucanase induced by CMC exhibits 76% of **residual activity after** 2 h at **80.degree.C**, maintaining about 100% activity after 1 h at 50.degree.C, pH 5.0; it has a half-life of 17 min **at 70.degree.C, pH** 5.0. This enzyme shows optimal pH activity **at pH** 5.0 and pH stability between 4.0 and 6.36 where it exhibits a **residual activity** of more than 76%. The .beta.-D-glucosidase component was isolated by chromatog. on

TP1.B75